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Rethinking Economic Anthropology
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Economy in the Brain: Gifts and the Compromise of Medical Reason

A pizza parlor meal, a golfing trip to Bermuda, a pen inscribed with the Effexor insignia, a visitor's pretty face, a day out at the spa. Can these gifts – bestowed by pharmaceutical firms' representatives on doctors-in-training – influence doctors' brains and shape prescription habits? Do gifts distort the expert's reasoning power? Or can scientists retrain their brains to resist the seduction of gifts? The answers to these questions depend on whether doctors are beholden to the structure of their brains, or whether their brains are subject to them. Should medical school regulators treat doctors as neural subjects whose brains render them open to influence, or as the expert and rational actors of their own imaginings?

This past June (2007), the American Association of Medical Colleges gathered to pose these questions. The meeting, a *Symposium on the Scientific Basis of Influence and Reciprocity*, promised to provide “the scientific underpinning to ongoing Association initiatives aimed at mitigating the distorting effects of conflicts of interest in medical education and research.”

As the gathering commenced, a neuroscientist and two economists sat behind a long table in the ballroom of the (other) Washington DC Marriott. In an effort to develop evidence-based policy to regulate the power of pharmaceutical companies to influence them, the AAMC had invited them to present and review neuroscientific and behavioral evidence that could illuminate the issue of social influence on individual decision making.

Facing them was an equally impressive panel of doctors. David Korn, AAMC Senior Vice President and former dean of the Stanford medical school, raised the central question, "How does academic medicine reconcile its dependency on industry support with its claims to professionalism?" Mike Friedlander, the Chair of Neuroscience at Baylor College of Medicine and an AAMC executive council member, opened the meeting with some facts. The pharmaceutical industry spends over 25 billion a year on gifts for doctors. They wouldn't lay out such sums without reason. Doctors needed to consider the evidence for "how one person's brain influences another person's brain." Detecting such subtle suasion, he continued, has presented an epistemological problem. "Influence," in its dictionary definition, is said to operate "without any direct or apparent effect." Yet Friedlander was sanguine about the possibilities for detecting influence's effects: "This definition was surely written without the

benefit of neuroscientific data,” he chimed, anticipating the brain scan images that would shortly grace the power point screen.

The Gift and the Ventral Valuation System

Read Montague, a computational neuroscientist whose work focuses on choice, opened the panel with a core anthropological question: “What is it about subtle acts requiring no reciprocation?” To explain the biology of influence, he first outlined what he calls the “ventral valuation system.” Dopamine neurons emit error signals guiding valuation and choice. Evolution, he lectured, has built into our brains fiendishly efficient computational mechanisms that help us to seek rewards.

The “ventral valuation system,” both a site and a process of the human brain, places rewards on a common scale. Like money, this neural currency allows the brain to weigh potential payoffs. As Montague described, the ventral striatum response indicates likes and dislikes based on the intrinsic qualities of the object. By looking into the brain with an fMRI scanner, the neuroscientist can witness the brain’s process of valuing rewards, including those “subtle acts” that *seem* to require no reciprocity. The obligations of the gift inscribe a neural signature.

To make his point, Montague described an experiment that harnessed the ambiguous value of art to the problem of the subtle gift. Montague's lab tested the question, How does sponsorship influence art valuation? Anne Harvey, a doctoral student at Baylor, recruited participants to view art while lying inside the scanner. On their arrival at the lab, Harvey oriented the subjects to their task, detailing their next thirty minutes inside the magnet. As she wrapped up her account, she informed each subject that he was being sponsored for \$30 by a fictional company and pointed to a logo she had assembled on her PC. Inside the scanner, participants' brains showed a clear response. When images appear alongside the sponsor's logo, the evaluations of the ventral striatum begin to disappear. With the company's support increased to \$100, the central valuation response vanishes altogether. The gift of sponsorship not only enhances the preference for images associated with the firm's logo, but also shifts the balance among neural systems that evaluate quality, unconsciously inclining preference toward the sponsor. The neural activity associated with independent assessment falters with even a small social reward.

The results point to a biological trait that weakens the possibility of rational assessment. After all, when are decision makers isolated from social influence? We should be concerned, Mike Friedlander argued, about "cognitive behavior without conscious attention."

Expert reason

The AAMC had envisioned its meeting as a reasoned exchange among scientists, some of whom would present evidence, and others who would assess how well that evidence could inform policies for their own institutions and practices. The self-regulating, medical organization would seem to be the ideal place for such a cogent evaluation. Who better to discuss the limits of reason than those scientists professionally and personally committed to it?

Instead, the symposium set up **a conflict between science and scientists**. Confronted with evidence of a human susceptibility to influence in the neural substrate, the doctors argued with conviction that their own reason stood intact. Professional judgment, they insisted, discounted gifts, severed ties with the pharmaceutical company, and rendered the doctor independent of attempts to win their allegiance.

As the doctors on the panel and in the audience began to respond, medical reason took on a specific character resting on the twin qualities of consciousness and independence. Doctors must assign diagnoses according to the case before them and appraise medications based on their own merits. Reasoning should take place within full view of the conscious mind, evidenced in written case notes and signed scrips. The practice of independent reason also demands evaluating cases in their own time, without a view to securing potential streams

of research funding or future cruises. Gifts corrupt this temporal segmentation, encouraging the brain to prospect for rewards. The gift itself augurs another payoff. Or as Montague put it, the gift of a pen “portend[s] many future things.”

Enacting policies to strengthen the external conditions in which medical reason could function first required the doctors to recognize their own biological alignment with the brains of Montague’s and Harvey’s subjects. This was not going to be an easy task, Mass General’s David Blumenthal, averred. Regulation posed the challenge of “convinc[ing] people who have been selected for their performance and ability to reason and convince them that they are acting irrationally.” **“The bias of rationality”** leads doctors to belief in a myth, that “we are capable of making, calculating, unbiased decisions even though we are immersed in incentives that would cause us to do otherwise,” he cautioned. The President of the bioethics institute, The Hastings Center, layered on the cultural power of conscious decision-making and independence. “Doctors don’t want to hear that there are things going on in their heads that they are not aware of.”

Brain imaging techniques themselves left an opening for the doctors to profess the singularity of the expert brain. In order to claim knowledge of human neural function, neuroscientists create images that combine many individual brains in action. Moving from recordings of isolates cases to identifying a broadly “human” response requires aggregating individual images. To create

the color-splattered pictures of activity in the striatum or cortex, neuroscientists average across brains. Like all averaging, this process eliminates the outliers; in this case, the realm of the doctors whose ventral valuation systems might continue to pulse even under corporate sponsorship. Averaging across brains to locate the neural circuits of influence dulls the ability to make distinctions among different kinds of brains, especially between “everyday” people and experts.

This technical critique lines up neatly with an ethical commitment to the idea of their own independence of reason and impermeability of their judgment. From the perspective of rational action, if pens and cruises really do corrupt doctors’ reason, the failing is moral. Doctors’ must exercise their trained reason to protect their clients, not only from disease and disability, but also from the market. Influence is evidence, then, of the abrogation of that moral commitment. Rationality corrupted, doctor corrupted. However if rationality can be restored, doctors can be vindicated. **This renewal would require a shift in understanding the subjectivity of the expert, from the rational man to the neural subject.**

Conclusion: Brains in the marketplace

Within current market arrangements, doctors and medical schools need pharmaceutical firms to fund education and research, and drug makers need

medical schools for testing. Drugs are developed for the marketplace of prescribing doctors and pharmaceutical firms will seek to influence the perception of their drugs based on their own market common sense. However, the neuroscience evidence presents a new lens on how they achieve influence. With gifts, the firms can perform a literal brain-washing that bathes doctors' brains in dopamine. If the AAMC recognizes doctors as neural subjects, the question is as simple as it is vexing: *How to manage brains in the marketplace?*

Achieving independence of thought and rationality within market interactions depends very much on the view of the subject and on the effects of the market. In foundational ideas of capitalism, dating all the way back to Adam Smith, market interactions were understood to *create* rational actors. Calculations of interest in the marketplace lead to prosperity for all, and, perhaps more importantly, to self-governing political subjects. The practice of rationality endowed individuals with conscious reasoning capacity with which to manage their own affairs.

The neural subject poses different political problems and solutions. Exchange is based not on independent interests but on mutual influence. Like cocaine addicts, regulation cannot simply ask doctors to "just say no" to rewarding stimuli, instead, as Montague argues, the brain can be considered an addict whose pleasures must be managed through the manipulation of the

external environment. Rules and incentives could channel and deflect neural-level rewards. Doctors cannot swear a professional oath that they won't be influenced. Instead rules and incentives should work with the scientific fact of their bias.

For the doctors, the answer to the biological failure of reason lies in imposing it. Regulating the environment of exchange holds out hope. Doctors and other people with brains must operate under conditions that make individual reasoning possible. Independence of thought requires reshaping conditions under which "one person's brain influences another person's brain."

Rules, incentives, and decision support systems can externalize reason. Reflecting on the neuroeconomic evidence, Read Montague suggested some subtle ways to promote independent thinking. Manufacturers' names should be masked in drug testing programs. Drug companies should continue to support research, but should tithe into a common pot under the control of medical school personnel. Interrupting the distorting capacity of the gift can allow individual rationality to emerge. The policy question: how to bracket the rationality - dulling effects of influence and keep the ventral valuation system working?

At the meeting, scientific evidence based on many lay brains called into question the individual scientist's capacity to reason. However, the tension between aggregated data and the diversity of individual action, allowed for the

possibility of individual reason to remain intact. Will the belief in the power of individual reason remain the guiding principal of medical policy? Or will these doctors delineate new rules that define themselves instead as neural subjects whose very synapses compromise their independence as thinkers in certain contexts of influence? The policy lingers in committee.